



ON THE PATHOLOGY
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By SIR LAUDER BRUNTON

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ON THE PATHOLOGY AND TREATMENT OF SOME FORMS OF HEADACHE.

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OF all the kinds of pain which afflict humanity, or at least civilised humanity, there is perhaps none which causes a greater amount of misery than headache. Although the pain of it may not unfrequently be slight, yet the number of people affected by it, the frequency of its recurrence, and the intensity which it sometimes attains, raises the total amount of pain produced by it to such an extent, that the means of relieving or curing it becomes a most important therapeutical question. We all know that the part of the nervous system by which sensations either of pleasure or pain are perceived is in the brain; for if communication between the head and the body or its parts is destroyed by section of a nerve or of the spinal cord, the individual is totally unconscious of any impressions made upon the periphery. The exact seat of sensation has been further localised by my friend Dr. Ferrier, who has ascertained that the destruction of the hippocampal convolutions on the one side of the brain produces anæsthesia of the opposite side of the body, so that neither pinching nor touching with a hot iron gives rise to any evidence of sensation. We may therefore look upon the hippocampal convolution as the seat of sensation, at least for the surface of the body, whatever may be the seat of sensation for internal organs.

In a condition of health the sensory centres in the brain perceive no pain unless some injury is happening to a part of the body, and pain is thus a useful monitor, warning the individual to stop the mischief which is occurring before it be too late. In certain unhealthy conditions of the brain, however, the sensory centres in the brain may be so affected that pain is felt although no injurious

process whatever is occurring in any part of the body. Such a condition is probably the explanation of what we find in hysteria, when such intense pain may be felt in a joint, for example, as to induce the patient to insist upon the amputation of a perfectly healthy limb. In such a case as this the disease appears to be due entirely to alterations in the sensory centres in the brain, while the whole body appears to be healthy. I say *appears*, because, even in such cases, it is possible, and indeed probable, that some morbid condition may be present which has escaped our notice, because there may have been little or nothing to direct our attention to it as the cause of the disease. But the sensory centres in the brain are securely lodged within the skull, and are not likely to undergo any morbid change unless it is started either by alterations in the quality or quantity of the blood circulating through them, or by impressions conveyed to them by afferent nerves. We find, as a rule, in the healthy body, that irritation of any part is felt in the place to which the irritant is applied, so that attention is consequently at once directed to it, and an effort made for its removal; but this is not always the case, for even in the healthy body we find it is sometimes difficult to localise an impression. Perhaps no better instance of this can be given than the bite of a flea, which is sometimes felt two or three inches from the real seat of irritation. In abnormal conditions this reference of irritation to a spot where no irritant is present may be greatly increased. In the case of hysterical pain in the knee-joint, to which I have already referred, the source of irritation is not in the knee, but is probably, to a considerable extent at least, in the sexual organs, from which afferent impulses proceed to the brain, and there induce morbid changes which are probably similar in kind to those which would have been caused by acute irritation in the knee-joint; pain is thus felt by the individual, and referred to the knee although the joint itself is perhaps healthy. When such a pain as this is felt by persons presenting certain general characteristics, we call it hysterical, but in its essentials it is simply neuralgic. The term neuralgia is a very convenient cloak for our ignorance, and we apply it as a rule to all acute pains for which we can find no apparent cause. A good deal of discussion has arisen regarding the nature of neuralgia, and several writers hold that neuralgic pain is of central origin. According to this view, we may look upon hysterical pain in the knee-joint as a most marked and typical neuralgic affection. This view is probably the

true one so far as it goes, but it is imperfect, and will, I think, mislead us if we do not try to find out in all cases the peripheral origin of the central changes, for in minor neuralgias, as in the case of hysterical knee-joint, the changes in the brain are probably started by some irritation of sensory peripheral nerves. Thus pain in the temple is very frequently due to the irritation of a decayed tooth. Sometimes a pain may be felt in the tooth as well as in the temple, just as in the ordinary experiment on the so-called funny bone, pain or tingling may be felt at the elbow where the ulnar nerve is twitched as well as in the fingers to which its terminal branches are distributed. Sometimes, however, this is not the case, and the pain is felt in the temple without any in the teeth. My attention was first directed to the relation between pain in the temple and decayed teeth many years ago. A servant of my brother's was suffering from toothache, but complained still more of intense pain in the temple. I did not know what to do for the pain in the temple, but thought the toothache might be relieved by applying solid carbolic acid on a pledget of cotton wool. I accordingly introduced this into a large cavity in one molar. To my great disappointment it gave no relief whatever. In the course of a very few minutes, however, her fellow-servants came running to tell me that cook was now quite free from pain; that she had taken the cotton wool out of the tooth into which I had put it and placed it in another decayed tooth, and at once the pain vanished both from the tooth and the temple. In this case the irritation of a decayed tooth had produced a two-fold pain—a pain felt in the tooth itself, and also one felt in the temple; but sometimes a decayed tooth will cause headache when no pain is felt in the tooth itself. I was first led to observe this by watching my own case. One day I was suffering from severe megrim, the pain being limited to the left temple; there was tenderness on pressure over the spot. On many other occasions I had noticed that the eyeball was tender at the same time, but on that occasion there was no tenderness of the eyeball. Passing my finger over the side of the head and face in the endeavour to find a second tender spot, I at last came upon one under the angle of the jaw. The tenderness here was due to a small gland, which was hard and painful to the touch. The occurrence of an enlarged gland at once led me to seek for the source of irritation in a district from which it received the lymphatic vessels, and I accordingly examined the mucous membrane of the mouth and tongue,

at without seeing anything abnormal. I then took a steel point, with which I probed and percussed all my teeth in succession. Every one was sound excepting the last molar on the same side as the headache, and on the posterior aspect of this there was a point, tender on pressure, although no cavity could be found. I went to a dentist as soon as possible afterwards, and he informed me that the caries was just beginning at the spot which I had thus discovered. Some time ago a clergyman of my own acquaintance began to suffer from headache so intense as completely to incapacitate him. After taking various medicines in vain, he went for a Continental tour, but came back little benefited, and as soon as he resumed work the headache was as bad as ever. Shortly after his return I saw him, and remembering my own experience, I suspected his teeth. On looking into his mouth, however, I could see nothing; all his teeth seemed to be perfect. I then took a steel bodkin and probed and percussed each tooth in succession. At last I came to one which was tender. I advised him to see a dentist about it. This he accordingly did, and the tooth was found to be carious. It was at once properly stopped and the headaches disappeared. So frequently are headaches dependent upon decayed teeth, that in all cases of headache the first thing I do is carefully to examine the teeth. Not unfrequently when I have pointed to a decayed molar as the origin of the headache, the patient has said, "But I have no pain in the tooth;" and to this I usually answer, "It is quite natural. You get the toothache in another part of your head."

The question now arises, what is the cause of the pain felt in some other part of the head instead of the seat of irritation, but originating in some local irritation like that of a decayed tooth? Is it only due to changes in the centre for sensation in the brain, or to alterations in the periphery, or to both? I am inclined to believe that while it may sometimes be due to changes in the centre for sensation in the brain only, as in the case of hysterical pains, yet sometimes functional peripheral changes either accompany these central changes, or may of themselves give rise to the pain. In this latter case the peripheral alterations are probably produced through the medium of the sympathetic system. Thus I have noticed that the scalp, over the place where the pain is felt in headache depending on a decayed tooth, becomes tender on pressure while the pain lasts. This tenderness, however, is very transitory, and I have sometimes felt the headache and accompan-

ing tenderness disappear from one part of the head and appear in another with great rapidity. The disappearance of the tenderness along with, or very shortly after, that of the pain, shows that there can be no structural alteration of any importance in the tender part. There may, however, be very important functional changes in blood-vessels of the painful part, and I think that headache is very frequently due to those changes; that, in fact, what we may regard as a kind of colic in the vessels occurs in the part, and this gives rise to the actual pain.

The mechanism of the headache here is that the irritation in a tooth, for example, acting through the vaso-motor nerves, causes vascular spasm, and this vascular spasm causes the pain of headache.



Fig. 9.—A very diagrammatic representation of the connection between the branches of the fifth nerve and the sympathetic system, intended to indicate the nervous channels through which irritation of the fifth nerve may affect the vessels of the head.

In cases of headache and toothache combined, the headache may be simply due to changes in the centre for sensation in the brain, or these may be accompanied by spasm in the vessels of the head.

In cases of headache depending upon a decayed tooth, where no toothache is felt, it is not improbable that the irritation in the tooth does not give rise directly to the sensation of pain in the head, but does so by acting through the sympathetic system on the vessels so as to cause the spasm which leads to the sensation of pain. If this be so, we ought to be able to alleviate headache, not only by treating the tooth which is the original source of the evil, but also by such measures as will relieve the spasm of the vessels themselves, and this, I think, is shown to be the case in practice.

A great deal of discussion has taken place regarding the condition of the vessels in megrim. Du Bois-Reymond, who suffered much from it himself, attributed the pain to spasmodic contraction of the vessels, for he found that while the pain lasted his temporal artery on the same side became tense and hard like a bit of whipcord, and the pupil of the corresponding eye dilated, as if the sympathetic in the neck had been irritated. Others again have held, also on the ground of personal experience, that the arteries, instead of being contracted, were widely dilated. The reason of this discrepancy is simply, I think, that these observers have not examined the arteries throughout their length. In my own case I have sometimes found that during an attack of megrim the temporal artery on the affected side was hard like a bit of whipcord as described by Du Bois-Reymond, but that at other times, when no difference between the amount and kind of pain could be detected, it was widely dilated and pulsating violently. But on those occasions, if I traced it along its course, I found that while the trunk of the artery was dilated at the temples, its smaller branches as they passed on to the forehead were hard and contracted, and felt almost like pieces of wire under the skin. The carotid artery was also widely dilated and pulsating violently, as well as the temporal. The condition here then was a disturbance in the proper relation of the calibre of different parts of the same artery. The proximal end was abnormally dilated; the peripheral end was abnormally contracted. The same condition is present in those cases where the trunk of the temporal artery is contracted, for if the finger be carried backwards, the trunk of the carotid is felt to be dilated.

The only difference, then, between those cases of megrim in which the temporal artery is dilated and those in which it is felt to be contracted is a difference in the point of the artery at which the contraction takes place. The consequence of this disturbance in the relationship between different parts of the artery is that the blood, instead of being gradually regulated in its onward flow by the gentle action of a long artery, is suddenly checked by a local contraction, and the successive impulses produced by the jets of blood sent from the heart along the dilated arteries hammering upon this contracted point give rise to great pain. This pain can be at once relieved by compressing the carotid, so as to arrest the flow of blood through it; but unfortunately a feeling of undefinable distress is usually produced by this procedure, so that one can

generally keep it up only for a few moments. It may sometimes be relieved for several minutes by gently pressing on the carotid, so as simply to diminish its flow without entirely arresting the circulation in it.

Heat and cold are two of the remedies used to lessen headache; sometimes one is useful, sometimes the other; and so far as I know, no explanation has hitherto been given of the reason why.

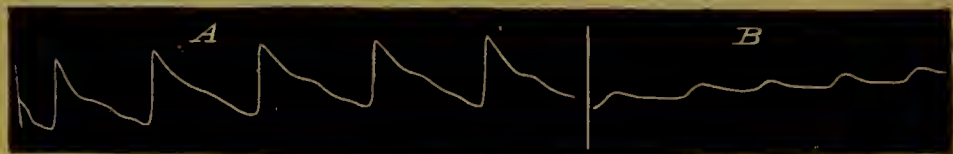


Fig. 10.—Tracings from the radial artery at the wrist: *A* before and *B* after the application of a cloth dipped in cold water round the arm. After Winternitz.

I believe it is simply this: That when heat is applied over the contracted peripheral vessels, it tends to relax them, and thus restores the equilibrium between the different portions of the artery; when cold is applied over the dilated vessels, it causes them to contract, and thus restores the equilibrium between them and the contracted peripheral parts.

The effect of the local application of heat and cold over the course of an artery has been well shown by Professor Winternitz of Vienna. I have seen him place a sphygmograph on the radial artery, take a tracing and then apply cloths dipped in ice-cold water around the arm; the consequence was, that the tracing of the radial artery at once became very much smaller from the contraction of the brachial. On this account cold compresses to the neck are sometimes very useful in headache.

Sometimes warmth to the throat may relieve, but here the *modus operandi* is different; the effect of the warmth in all probability being exerted not directly upon the vessels themselves, but rather upon the sympathetic ganglia in the neck by which the calibre of the vessels is regulated. And here I may perhaps say a word regarding this nervous mechanism. The carotid artery and its branches derive their vaso-motor nerves from the superior cervical ganglion, and to disturbance of the functions of this ganglion are, I believe, due the headache caused by dental irritation. (p. 102.) I do not know that du Bois-Reymond's headaches depended upon a decayed tooth, but I should very strongly suspect it. In his case there was distinct evidence of sympathetic dis-

turbance in the dilatation of the pupil of the affected side. In my own case I have never noticed any dilatation of the pupil, but I have observed a curious transference of pain from the temple to the occiput, and from the occiput to the temple again, so rapid that I think it can only be ascribed to a disturbance of the cervical ganglion. The explanation which I give of it is this: That at one time, the vaso-motor branches of the temporal are affected, at another those of the occipital artery, and the rapid change of the headache from one part to another is due to an alteration in the ganglion itself. The occurrence of occipital headache in place of temporal in my own case attracted my attention to decayed teeth as a cause of occipital headache, and I found that it is by no means unfrequent. The other day I saw a scientific



Fig. 11.—Diagram showing the seat of pain in megrim or occipital headache depending on decayed teeth or defects of the eyes. The shaded area shows the seat of the pain; the spot in each area indicates the seat of tenderness on pressure.

man who was complaining much of occipital headache on the left side. I at once said to him, "The second molar on the left side of your lower jaw is decayed." This statement was not quite correct, for the decayed tooth turned out to be the second molar on the left side of the upper jaw, but it was so near the truth that it astonished him greatly, because it had never occurred to him that there could be any connection between a pain at the back of his head which gave him great annoyance and a decayed tooth which did not trouble him in the least.

In regard to the situation of headache depending upon decayed teeth, I find that a decayed molar in the lower jaw usually gives a temporal or occipital headache, and a decayed molar in the upper jaw causes temporal headache which is rather farther forward than

that caused by the lower jaw. Decayed incisors or eye-teeth are more likely to cause frontal or vertical headache.

Another source of headache closely allied to the teeth is sore-throat. Enlarged and inflamed tonsils are apt to give rise to headache, which usually tends to run up in front of the ears and over the vertex. On one occasion I suffered from inflammation of this sort, and found that at first the pain was diffused all over the head, so that one could not localise it at one point more than another, but that as the inflammation went on, the pain became more localised at the sides of the head and vertex, and gradually extended downwards and became more localised, until it was felt very distinctly in the throat, and hardly in the head at all.

Perhaps a still more frequent source of headache than even decayed teeth are abnormal conditions of the eyes. The headache which comes on after working with the microscope, or after straining the eyes in a picture gallery, is only too well known. It is usually frontal, often extending over the whole breadth of the forehead, but sometimes limited to the forehead above one orbit.

On one occasion I remember seeing a friend who had been working with a microscope, and was suffering from most intense headache. On entering the darkened room in which he was lying, I thought at first that his eyes were jaundiced, but closer examination showed that the apparent yellowness was due to great injection of the vessels of the sclerotic.

It would be going too far to say that frontal headache is always due to an abnormal condition of the eyes, but I believe it is so much more frequently than one would at all suspect. Even the frontal headache which occurs in derangement of the stomach and biliousness is, I think, very frequently connected with an abnormal condition of the eyes to which the indigestion gives rise, for if we press the finger upon the eyeballs during a bilious headache, we not unfrequently find that they are abnormally tense and the intraocular pressure high, so that the eyeball feels almost like a marble under the finger. Curiously enough, too, I have noticed that some persons who suffered from bilious headache in early life begin to suffer from giddiness whenever they become bilious as they grow older. This giddiness during a bilious condition began to come on just at the time when their sight began to alter and they commenced to wear spectacles.

But frontal headache is not the only one which may arise from abnormal conditions of the eyes, for megrim or sick headache is

very frequently associated with, and probably dependent on, inequality of the eyes, either in the way of astigmatism, myopia, or hypermetropia.

Formerly I used to suffer myself from megrim, which might affect either side of the head, but for some years past it has almost invariably affected the left side. My right eye is normal, but the left is hypermetropic, and probably the greater strain that is thrown upon this eye in reading leads to the headache on the same side.

The relationship between megrim and abnormalities of vision has been pointed out by several authors, amongst others Mr. John Tweedy, Dr. Savage, Mr. Higgins, Dr. Brailey, and Mr. Carter.

The good effects of spectacles in megrim was well illustrated in the case of one of my colleagues who suffered very frequently, but after getting a proper pair of spectacles did not get a headache half so often as before.

Although dental irritation and abnormalities of vision are probably the two most common and most important causes of headache, yet the nose and ear are also channels through which external irritation may operate in producing headache, and they must not be overlooked. As far as my experience goes, headache depending upon disease of the nose is at the top of the head, just behind the commencement of the hairy scalp, and headache here should always lead to an examination of the nose.

The frontal headache, however, which occurs in ordinary cold in the head, and which probably depends upon congestion of the mucous membrane lining the frontal sinuses, is known to every one; and Dr. Hack¹ of Freiburg has observed several cases both of megrim and of frontal headache depending upon congestion of the mucous membrane covering the inferior turbinated bones, and he has been able to effect a radical cure in several cases by the application of the galvano-cautery to the inflamed and swollen mucous membrane.

In the causation of headache, however, we have always to consider two things—the condition of the organism generally and the local source of irritation. We have hitherto directed our attention to the local sources of irritation, but local irritation alone will not cause headache. We find that numbers of people have decayed teeth, and yet they suffer neither from toothache nor headache, excepting perhaps occasionally. The source of irritation

¹ Ueber eine operative Radical-Behandlung bestimmter Formen von Migräne, Asthma, Heufieber, u. s. w. Von Dr. Wilhelm Hack, Wiesbaden, Bergmann.

is constantly there, and yet the effect it produces appears to be only occasional. The occasional pain is the reaction of the organism to the irritant, and its intermittent occurrence is probably to a great extent due to the organism being only occasionally in such a condition as to give this reaction. We know that the pain of toothache, for example, is often at once remedied by a brisk purgative, although the tooth remains in the same condition, the purgative having so altered the organism that it no longer responds in the same way to the irritation of the tooth. I use here the vague term *organism* in place of using the more definite one nervous system or cerebral centre of sensation, because we do not at present know the exact mechanism by means of which brisk purgatives produce such an effect. It is highly probable that they do so not directly but indirectly, by modifying the irritation or by clearing away poisonous substances from the intestine.

There are several conditions of the body which tend to give rise to headache more especially; these are indigestion, biliousness, constipation, fever, plethora, anæmia and debility, rheumatism, gout, and albuminuria.

The headache of indigestion, biliousness, and constipation is generally frontal, but it does not always affect the same part of the forehead. As a rule, derived from an exceedingly large experience in the Casualty Department at St. Bartholomew's Hospital, where one sees cases not by tens, but by hundreds and thousands, I have found that frontal headache associated with constipation is removed by the *Haustus Magnesii Sulphatis*¹ of the hospital Pharmacopœia; that headache just above the eyebrows, and not accompanied by constipation, is relieved by *Haustus Acidi Nitro-hydrochlorici*;² while headache, also unaccompanied by constipation but situated higher up on the forehead, just below or at the commencement of the hairy scalp, is relieved by alkalies, usually given in the form of *Haustus Calumbæ Alkalinus* (p. 125), twenty minutes before meals. Occipital headache is also sometimes associated with indigestion, and is sometimes relieved also by *Haustus Acidi Nitro-hydrochlorici*, but in it careful attention should be paid to the condition of the teeth. The headache of fevers is usually frontal, and this is, I

¹ The formula for the *Haustus Magnesii Sulphatis* is:—

Sulphate of Magnesia, 1 drm.
Diluted Sulphuric Acid, 10 minims.
Syrup of Red Poppies, $\frac{1}{2}$ drm.
Mint water to 1 oz.

² The formula for the *Haustus Acidi Nitro-hydrochlorici* is:—

Dilute Nitro-hydrochloric acid, 10 min.
Spirit of Chloroform, 10 min.
Tincture of Orange peel, 20 min.
Water, 1 oz.

think, associated to a great extent with alteration in the vascularity and tension of the eye. When resident physician in the Infirmary at Edinburgh, I used to see a number of cases of typhus fever, and in this disease the injection of the eyes is well marked; and I was strongly reminded of the eyes of typhus patients by the appearance which, as I have already mentioned, I observed in my friend who was suffering from headache after working with a microscope. Both the injection of the eyes in typhus and headache in fevers generally, whether it be accompanied with injection of the eyes or not, probably depends upon the increased circulation caused by the greater heat of the body in the febrile condition, and by the presence of morbid products or poisons in the blood, which not

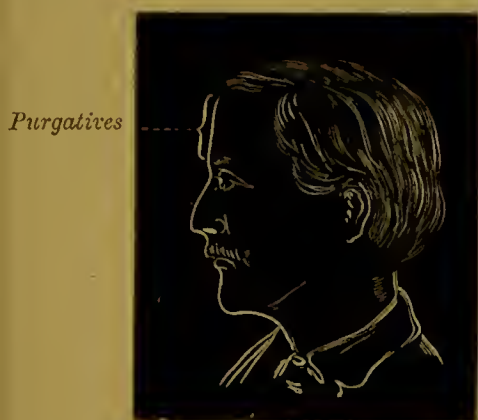


Fig. 12.—To show the position of the frontal headache which in cases of constipation is relieved by salines.



Fig. 13.—Showing the position of the frontal headaches relieved by acids and alkalies in the absence of constipation. The lower is relieved by acids, the upper by alkalies before meals. The lower one also indicates the occasional position of headache caused by straining the eyes.

only act upon the eyes, but upon the nervous system and the body generally.

Closely associated on the one hand with the headache of indigestion, and on the other hand with that of fever, is the headache of plethora, which is usually frontal or occipital, and depends both on the powerful circulation which is present in this condition and probably also on the products of tissue waste circulating in the blood.

The headache of anæmia and debility is usually vertical, and is usually associated with feelings of flushing, of heat, or sudden

chilliness, and *muscæ volitantes*, and not unfrequently also with gastric derangement, evidenced by pain in the epigastrium shooting through between the blade-bones.¹

The rheumatic headache very frequently is felt over a considerable part of the head generally, and is associated with tenderness over a great part of the scalp. The tenderness is sometimes excessive. This headache is frequently relieved by the administration of iodide of potassium. A formula given me by Dr. Image of Bury St. Edmunds for this headache, and which is very useful, contains 5 grs. of iodide of potassium, a drachm of tincture of valerian, and a drachm of aromatic spirits of ammonia. But although the rheumatic headache assumes very



Fig. 14.—Diagram to show the position of the vertical headache of anæmia.

frequently the form I have just described, it appears to me sometimes to show itself as a frontal or temporal headache, and to be associated with a rheumatic affection of the muscles of the eyes. On one occasion I administered some salicylate of soda for the relief of pains in the limbs which were associated with severe headache. The effect of the salicylate in relieving the headache was almost magical, and I have accordingly tried it in a number of cases since. I found that $2\frac{1}{2}$ grs. of the salicylate of soda, given either alone or with some aromatic spirits of ammonia, every half-hour while the headache lasts, will often after one or two doses cut short the headache, which would otherwise have continued for a whole day or more. I have been unable at present to distinguish

¹ This group of symptoms is usually much relieved by the administration of iron with a bitter tonic. The formula for the draught of Quassia and Iron in St. Bartholomew's Hospital Pharmacopœia is:—

Solution of Perchloride of Iron, 15 minims.

Infusion of Quassia, 1 oz.

gouty headache *per se* from the headache of plethora or indigestion, and should suspect the gouty element only from the patient's family and personal history.

In albuminuria the headache may be frontal, or may be felt as a tight band surrounding the head.

In syphilis its situation may vary, and it is generally recognised by its history, by its being more or less constant, remitting instead of intermittent, and by its frequent association with persistent tenderness at a limited spot.

I may now, in conclusion, sum up shortly the main points I have endeavoured to bring forward in this paper.

Headache is usually the product of two factors—local irritation and general condition.

The chief local causes are decayed teeth and abnormalities of the eye, although diseases of the ear and nose, inflammation of the throat, and local irritation of the pericranium or of the skull in rheumatism and syphilis, are not to be forgotten. Decayed teeth may give rise to temporal or occipital headache when the molars are affected, and also I think to frontal when the incisors are decayed.

The chief abnormal conditions of the eye which cause headache are strain from reading, or working with imperfect light, or for too long a time, myopia, hypermetropia, astigmatism, inequality of vision between the two eyes, and last, but not least, glaucoma.

Besides this, I think that alterations in the circulation and intraocular pressure are frequently produced by bile or poisonous substances circulating in the blood, and that probably also a rheumatic condition, affecting either the eye itself or the muscles which move it, is a not uncommon cause of headache. Where both eyes are equally affected, the headache is usually frontal; but when one eye is more affected than the other, the headache appears either in the form of brow ague or megrim.

In treating any case of headache, therefore, the first thing to do is to see whether the teeth are sound and the eyes normal. If anything is found wrong with either the teeth or the eyes, the defect should be at once corrected. The throat, ears, and nose should also be examined to see if any source of irritation is present there, and the surface of the scalp tested by pressure for rheumatic or syphilitic inflammation. Percussion should also be tried over the head in order to determine whether or not there is any intracranial tumour.

The locality of headache is probably determined chiefly by the local source of irritation, but this differs according to the general condition in a way that it is at present impossible to explain. Thus frontal headache with constipation is usually relieved by purgatives; frontal headache without constipation, just above the eyebrows, is relieved by acids; and a similar headache, situated higher up at the commencement of the hairy scalp, is relieved by alkalies. Vertical headache is usually associated with anæmia, and is relieved by iron. The more or less continuous headache of syphilis is usually best relieved by iodide of potassium; but in order to gain relief the dose must sometimes be much larger than that usually given, and may range from 5 grs. up to 30 grs. for a dose. Smaller quantities of iodide of potassium are usually sufficient to cure the rheumatic headache.

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